

**REMARKS**

The final Office Action of August 21, 2006, has been received and reviewed.

Claims 1-25 are currently pending and under consideration in the above-referenced application, each standing rejected.

Reconsideration of the above-referenced application is respectfully requested.

**Rejections under 35 U.S.C. § 102**

Claims 1-11 and 15-19 have been rejected under 35 U.S.C. § 102(e) for being drawn to subject matter that is purportedly anticipated by the subject matter described in U.S. Patent 5,972,792 to Hudson (hereinafter "Hudson").

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single reference which qualifies as prior art under 35 U.S.C. § 102. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

With respect to inherency, M.P.E.P. § 2112 provides:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) . . . 'To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill . . . ' *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1991).

Independent claim 1 recites a substantially abrasive-free slurry for use in polishing a copper structure of a semiconductor device. The slurry is formulated to substantially concurrently polish copper and a barrier material with the barrier material being removed at substantially the same rate as or at a slower rate than copper is removed.

Hudson discloses abrasive-free slurries that are useful with fixed-abrasive polishing pads. The slurries of Hudson are useful for planarizing films that have been formed from a variety of materials (*see, e.g.*, col. 22-25), such as copper. Col. 4, lines 50-52.

Hudson does not expressly or inherently describe that any slurry disclosed therein is formulated to substantially concurrently polish copper and a barrier material, with the barrier material being removed at substantially the same rate as or at a slower rate than copper is removed. The lack of express description of this requirement of independent claim 1 is evident from a reading of Hudson. In fact, Hudson does not mention removing a barrier material at the same time copper is polished.

The lack of an inherent description is evident from the prior art, in which slurries that are formulated to remove copper are generally incapable of removing barrier materials at about the same rate as or a slower than copper is removed. From the prior art, including that discussed in the Background section of the above-referenced application, the slurry of Hudson would not necessarily remove a barrier material at substantially the same rate as or a slower rate than copper is removed.

As Hudson does not expressly or inherently describe each and every element of independent claim 1, under 35 U.S.C. § 102(a), the subject matter recited in independent claim 1 is allowable over the subject matter described in Hudson.

Each of claims 2-11 and 15-19 is allowable, among other reasons, for depending either directly or indirectly from independent claim 1, which is allowable.

Claim 3 is additionally allowable since Hudson neither expressly nor inherently describes a slurry that is formulated to oxidize copper at substantially the same rate as or at a faster rate than a barrier material is oxidized.

Claim 4 is further allowable because Hudson does not expressly or inherently describe a slurry in which copper and a barrier material have substantially the same oxidation energies.

Claim 5 depends from claim 4 and is also allowable since Hudson includes no express or inherent description of a slurry in which a barrier material has an oxidation energy of about 0.25 V more to about 0.20 V less than an oxidation energy of copper.

Claim 6 is further allowable since Hudson lacks any express or inherent description of a slurry in which a rate of removal of a barrier material is up to about ten times slower than a rate of removal of copper.

Claim 7 is additionally allowable because Hudson includes no express or inherent description of a slurry in which a rate of removal of a barrier material is about two to about four times slower than a rate of removal of copper.

Claim 8 is also allowable since Hudson neither expressly nor inherently describes a slurry that is formulated to remove copper and a barrier material without substantially dissolving barrier material that underlies remaining portions of copper.

Withdrawal of the 35 U.S.C. § 102(a) rejections of claims 1-11 and 15-19 is respectfully solicited, as is the allowance of each of these claims.

#### **Rejections under 35 U.S.C. § 103(a)**

Claims 12-14 and 20-25 stand rejected under 35 U.S.C. § 103(a).

The standard for establishing and maintaining a rejection under 35 U.S.C. § 103(a) is set forth in M.P.E.P. § 706.02(j), which provides:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

#### **Hudson in View of Nakazato**

Claims 12-14 and 21-25 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over that taught in Hudson as applied to claim 1 above,

and further in view of teachings from U.S. Patent 4,459,216 to Nakazato et al. (hereinafter “Nakazato”).

Claims 12-14 and 21-25 are each allowable, among other reasons, for depending directly or indirectly from claim 1, which is allowable.

Moreover, it is respectfully submitted that Hudson teaches away from dissolving conductive material while oxidizing and polishing the same. Col. 4, lines 1-19, and col. 5, lines 55-64. In contrast, Nakazato teaches that “[a]n object of the present invention is to provide a chemical dissolving solution having a good dissolving capacity for various kinds of metal.” Col. 2, lines 33-35. In this regard, the mere fact that Nakazato supplies teachings that are missing from Hudson is insufficient to overcome the fact that Hudson teaches away from the asserted combination. As Hudson teaches away from the asserted combination of its teachings with those of Nakazato, it is respectfully submitted that one of ordinary skill in the art wouldn’t have been motivated to combine the teachings of these references in the asserted manner.

Therefore, a *prima facie* case of obviousness has not been established against any of claims 12-14 and 21-25 under 35 U.S.C. § 103(a).

#### Hudson in View of Suzuki

Claim 20 stands rejected under 35 U.S.C. § 103(a) for reciting subject matter which is allegedly unpatentable over the subject matter taught in Hudson and, further, in view of teachings from U.S. Patent 5,885,334 to Suzuki et al. (hereinafter “Suzuki”).

Claim 20 is allowable, among other reasons, for depending indirectly from claim 1, which is allowable.

It is respectfully requested that the 35 U.S.C. § 103(a) rejections of claims 12-14 and 20-25 be withdrawn, and that each of these claims be allowed.

#### **CONCLUSION**

It is respectfully submitted that each of claims 1-25 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the

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above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'Brick G. Power', with a long horizontal flourish extending to the right.

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Date: October 23, 2006

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